



## PART TWO – RECLAIM IMPLEMENTATION

### Chapter One – Early Implementation

**Authors:** Carol Coy and Danny Luong

**Contributors:** Fortune Chen, Chris Hynes, Don Nguyen, Paul Park,  
Cathy Ragland, Sandys Thomas and Susan Tsai

Initial implementation of the RECLAIM program presented many resource-intensive challenges not fully anticipated during the rule development process. Transition from command-and-control permits and compliance processes to the cap-and-trade program raised issues in a number of key areas requiring special attention of the participating facilities, as well as District staff.

#### Allocation Reviews

One of the most important components of RECLAIM is the annual allocations for the facilities in the program. The District staff and RECLAIM facilities recognized the significance of allocations and started the development of allocations during the rule development phase, prior to formal adoption of the program. These early developments led to refinements of the allocation methodology, including base year activity and emission factors to be used. Development of the allocation methodology relied heavily on, and highlighted the importance of, previously reported emissions and the related calculations. The availability and accuracy of existing production rate and emission data is crucial to the determination of fair and consistent allocations.

Most facilities worked closely with District staff to compile the data necessary for allocation determinations prior to the start of RECLAIM. Some of these efforts continued after the start of RECLAIM in the form of updating prior emission reports to rectify situations that the facilities believe were erroneous. Staff relied upon the provisions in the rules to guide these activities.

RECLAIM facilities were issued facility permits that contained their annual allocations.

Facilities that did not agree with the allocations filed appeals to safeguard their legal rights to have the allocations amended while working with

*Rules establishing allocations must specify a clear calculation methodology*

District staff to resolve discrepancies. Agreement was reached between the facilities and the District in almost all cases without going through an actual hearing. This end-result could not have been achieved if the rules did not include the clear calculation methodology, prescribed emission factors, and the exact production bases to be used.

The allocations of approximately 150 facilities have been revised after RECLAIM was adopted, based on updated information. Not all revisions were made in response to facility requests; some were the results of staff review of facility allocation calculations. The primary reasons for adjusting a facility's allocation included correction of an emission factor, re-apportionment of fuel usage, changing the peak activity year, and amendment of previously

*Consider limiting the length of time that allocation changes can be made*

submitted emissions data by facilities. In cases where facilities claimed that their emission reports contained errors, they were required to provide positive proof of production records or emission data from test results, and to submit amendments to the emissions reports. Some requests to change emission reports and amend allocations were received as late as 1999 - five years after the start of the program. RECLAIM rules do not have a time limit for changes to allocations. Even though it is more difficult for facilities to provide positive proof as time progress, it is also more challenging for the District to verify the data. A time limit for submitting requests for changes would have prevented a prolonged process and uncertainty. Some industries raised concerns about the amount of reductions proposed in the 1991 AQMP and how that translated into their annual allocations. In response to the above concerns, Rule 2015 included provisions to evaluate the ending emission factors for six specific source categories: glass melting furnaces; gray cement kilns; steel slab reheating, flat rolled product annealing and flat rolled product galvanizing furnaces; metal melting furnaces; hot mix asphalt operations; and petroleum coke calcining. Based on the Rule 2015 technology review, allocations adjustments were made for some of these facilities. This evaluation is another example where clear rule provisions can be adopted to guide further development after the rules are adopted.

## Permitting

Traditional permits for individual emission sources are not designed to carry facility level requirements. A new facility permit was designed to identify and itemize all emission sources within a facility, specify emission limits and operating conditions, list MRR requirements, and specify annual allocations for the facility.

The facility permit was designed with standardized permit conditions and other features to simplify the administrative process for the District. The structure and content of the facility permit was developed with the specific intent of achieving the following goals:

- Convey all regulatory requirements;
- Support reporting requirements;
- Streamline permitting and data searching;
- Apply conditions in a consistent and standardized manner;
- Automate permit generation; and
- Accommodate Title V federal operating permit requirements.

When RECLAIM was adopted, existing permits were prepared manually, and the contents were not stored electronically. Therefore, a new system was designed and developed to enter and store data needed to compile the facility permit. Unlike the case of allocation determination, design work on facility permit was started fairly late in the development of RECLAIM. This

*Allow time for development and implementation of new permit requirements*

compressed time frame required staff to simultaneously design the layout of the permit, develop the interface for inputting data, and collect all the existing permits for each facility. An earlier start to this effort would have allowed much smoother implementation. Additional time would have allowed training of non-technical staff to enter existing data into the system and allow engineers to review and correct content of the draft permits prior to sending them out.

Each facility was issued a draft facility permit for its review and comment. Staff worked with facility representatives to verify and correct the content before the final permit was issued at the

start of the RECLAIM program. The facility permit has proved to be vital in conveying requirements to operators. It also serves as a very useful tool for compliance determination. The data collected and stored in electronic format allows much more comprehensive data search and analysis.

### **Process for Resolving Issues**

Issues raised under Hearing Board petitions involved all aspects of the facility permits, including allocations, permitted equipment, and operating conditions. Most issues were resolved during extensive individual meetings between facility representatives and agency staff without going through actual hearings.

In general, issues arose because of lack of understanding of a set of complicated new requirements, ambiguity in the rule language, and the complexity of implementing MRR provisions in a wide variety of actual industrial settings. An extensive outreach program was the key to resolving implementation issues. The District hosted numerous public workshops, training seminars, open forums, and other meetings to help facility operators and consultants understand RECLAIM provisions. In addition, specialized working groups were established to resolve technical issues, such as CEMs and emission reporting. Where difficulties or circumstances unique to a particular operation were raised, staff would provide one-on-one help. During the first year of the program, District staff visited each facility to answer questions and verify installation and proper operation of fuel meters. District staff also periodically mailed information on the program, including notification letters informing RECLAIM facilities of upcoming compliance dates.

During the first three years of the RECLAIM program, District staff produced 17 Rule Interpretations and Implementation Guidance documents to help clarify specific requirements. These documents were distributed to RECLAIM facilities for their reference. In other cases, rule amendments were necessary to address implementation issues or situations that were not apparent during rule development. In the first three years of the program, the

*Implementation requires dedicated staff resources for facility assistance, outreach, and rule interpretation*

Governing Board approved eight amendments, ranging from minor corrections, to changes in monitoring requirements and emission factors used for calculating allocations.

Internally, an administration team was formed to coordinate operations throughout the District as they relate to RECLAIM. This team was responsible for the consistent application of the rule requirements and acted as the clearinghouse for RECLAIM-related issues. In addition to addressing issues raised by sources, the team's priority was to train District staff on RECLAIM provisions. Since RECLAIM represented a significant departure from traditional command-and-control regulations, extensive training of permitting engineers and field inspectors was conducted. The training areas consisted of:

*Formal implementation guidance documents and training help ensure consistent interpretation and application of program rules*

- Structure and provisions of RECLAIM;
- Conversion of equipment-based permits to a facility permit;
- Use of standardized permit conditions;
- Conversion of throughput to emission limits;
- New standards for New Source Review (NSR);
- New monitoring, reporting and recordkeeping requirements;
- RECLAIM inspection procedures; and
- RECLAIM audit procedures.

A RECLAIM Compliance Guideline document was developed in order to provide direction to District inspectors on the proper enforcement actions for RECLAIM violations. These training materials and the availability of a central clearinghouse assured that the provisions were consistently discharged and all sources were regulated in the same manner.

### **Certifying Compliance with MRR Provisions**

RECLAIM facilities were released from compliance with traditional command-and-control rules only when they were fully compliant with MRR provisions under RECLAIM. This assured no regulatory gap. One of the most significant new MRR requirements was the installation of CEMS on major sources. Besides detecting both concentration and exhaust flow rates from a

major source, CEMS automatically perform calculations that will yield daily mass emissions and perform data substitution if valid data are not collected.

A one-year period was allowed under RECLAIM to certify CEMS for major sources. During this interim period, production rates, such as fuel consumption rates, of sources were monitored. Emissions were calculated using a conservative approach based on emission factors which represented uncontrolled situations.

Retrofitting monitoring systems into existing exhaust stacks presented major challenges for some sources. RECLAIM rules were amended to allow delayed compliance dates as late as the end of 1997, four years from the initial implementation date.

Unlike the Acid Rain Program, which only dealt with one specific industry, RECLAIM covers the full spectrum of industrial facilities located in the Basin. The Acid Rain Program included a detailed listing of all parameters that may affect emissions. RECLAIM had to encompass the wide variety of industrial processes, so the range of parameters to be monitored could not be defined. The lack of a uniform data monitoring approach prevented the development of a tool that can be used to automatically confirm the accuracy of the emission calculation prior to actual CEMS operation.

Over the course of RECLAIM implementation, CEMS technical issues arose which delayed certification of many CEMS. To address these issues and further assist facilities in complying

*Working groups can assist with implementation issues*

with major source monitoring requirements, a standing working group on RECLAIM CEMS Technical Issues was formed to provide a forum in which facility representatives,

consultants and District staff could discuss and work out technically sound and reasonable solutions. Although the working group was open to any interested party, the issues it has addressed tend to be associated mainly with refineries implementing CEMS requirements. This difficulty is due to the variability of the fuel used in refinery equipment as compared to natural gas, the operational variability of much of the affected equipment, and the fact that many of the sources in older refineries were never constructed with CEMS monitoring in mind. The working group created subcommittees to deal with issues related to:

- pre-certification testing and information requirements for CEMS;
- post-certification testing requirements for routine (foreseeable) repairs or replacements of portions of the CEMS, vendor pre-certification of analyzers, and data submittal formats for semiannual and annual assessment testing; and
- certification of total sulfur compound monitoring systems.

A significant number of issues were resolved through clarifications and Technical Guidance Documents. These resolutions were the result of cooperative and open discussions of the issues at hand and creative approaches to bring about technically sound solutions.

### **Lessons Learned**

- Accurate emission inventory is crucial to developing fair and consistent allocations.
- Detailed and precise allocation methodology needs to be spelled out.
- Specify time limits and procedures for refining allocations.
- Compile all requirements into a centralized document.
- Recognize the necessary changes to existing systems and start early.
- Allocate adequate resources for both new and existing programs.
- Open dialogue is key to implementation success.
- Criteria for determining compliance need to be well understood both internally and externally.
- Set up procedures to allow for improvement of the program.
- Accurate and verifiable emission determination is crucial to a market incentive program.
- Include an adequate length of time in an implementation phase to assure proper emission measurements are established as new monitoring instrumentation is installed.
- Be aware of unique situations that present technical challenges to properly monitor emissions.
- A well-defined data substitute scheme must be in place to account for the inevitable periods when valid emission data cannot be obtained.

## **Chapter Two – On-Going Implementation**

**Authors: Carol Coy, Peter Mieras, Nancy Feldman, Allen Mednick, Joe Panasiti and Danny Luong**

**Contributors: Fortune Chen, Chris Hynes, Don Nguyen, Paul Park, Cathy Ragland, Sandys Thomas and Susan Tsai**

Throughout the existence of the program, the RECLAIM Administration Team was maintained to coordinate operations of the various divisions within the District in response to issues related to RECLAIM. Its duties include interpreting rule requirements, responding to inquiries, staff training, tracking emissions, processing RTC trades, resolving issues, drafting rule interpretations, and proposing amendments to RECLAIM rules. This team is essential to ensure consistent application of RECLAIM provisions.

### **Permitting**

District staff annually re-issues part of the facility permit dealing with the allocations to document facility annual emission targets and to reflect a facility's allocation at the start of the compliance year reflective of facility RTC purchases and sales, as well as exceedance deductions or other adjustments. In addition to the re-issuance of the facility permit for allocation changes, the District staff also re-issues the facility permit, as needed, due to the following:

- Addition, modification or removal of equipment;
- Modification of source classification (major, large, process unit), which impacts the MRR requirements, or changes in fuel usage or heat input limitations;
- Emission factor or concentration limit changes;
- Alternate MRR requirements; and
- Administrative changes – such as information on responsible official, contact names, and change of operators, etc.

The permit database formed the basis for receiving emissions by individual pieces of equipment. This is the first time ever that emissions from individual sources are identified with the sources



and linked to each other. This allows District staff to efficiently conduct emissions audits as data from permits can be cross-checked with data from emission reports.

### **Emission Audits**

District staff has been conducting annual emission audits at each and every RECLAIM facility since the start of the program. These audits verify compliance with MRR requirements and where errors are found, the emissions are corrected prior to determining compliance with the facility annual allocations.

Auditing MRR records from RECLAIM facilities required significant adjustments to the existing field compliance inspection procedures. Even though inspectors were accustomed to collecting and reviewing operational data, they had to be trained on reviewing data generated by CEMS and on the various mass emission calculation methods specified under RECLAIM. RECLAIM sources are categorized into major sources, large sources, or process units based on their size and emission potential. Different MRR requirements are applicable to different source classifications. In addition, a wide variety of emission sources from different industries are included in RECLAIM. There are also different types of monitors and record retention equipment used by facilities. The lack of uniformity in the data collected prevented the development of an all-encompassing emission calculation tool that can be employed from facility to facility. As a result, emission audits have to be tailored to each individual facility and performed by inspectors assigned to the facility.

District inspectors are trained to follow general auditing steps and use a standardized audit forms developed for this purpose. Engineers are available to assist inspectors with data and calculation procedures. The general auditing steps consists of pre-audit preparation, field inspection and audit, data gathering, post-inspection emission review, and results. Emission reviews can be subdivided into two types – CEMS data and other.

Real time emissions data are collected by CEMS every few seconds and are averaged to yield 15-minute and hourly data. These data are totaled to provide daily mass emissions. Since the calculation is performed by a computer system, a random spot check of several days is sufficient

to determine if the system is set up to properly calculate emissions. Missing Data Procedures are required when CEMS are not operating properly.

Emissions from non-major sources are mainly dependent on the amount of fuel consumed and a permitted emission limit or factor. Therefore, the emission audit is focused on verifying fuel consumption records for individual pieces of equipment. Large sources are required to keep monthly fuel data and process units are required to keep quarterly fuel data. Verification of fuel consumption by each piece of equipment can also be quite challenging in cases where there are numerous sources of different categories. Where fuel consumption data are found to be inaccurate, facilities are required to provide proof of accuracy for the fuel meters. Inaccurate fuel meters are required to be repaired or replaced. Data obtained from inaccurate fuel meters are substituted with Missing Data Procedures.

*Audits are a necessary part of compliance verification*

Audits completed by field inspection teams are reviewed to assure that RECLAIM provisions were consistently applied, emissions calculations are complete, and to verify compliance determination with facility annual allocations. This final step is necessary because facility allocations change constantly due to emission debits and RTC transactions. This step has also helped raise the quality of the audits generated by inspectors.

Audits conducted by District staff revealed many different problems related to MRR requirements. The most common causes can be attributed to human errors and the most significant emission impacts are related to failure of CEMS. Human errors include math errors, inaccurate records, untimely records or report submittal, and late source tests or Relative Accuracy Test Audits (RATA) for CEMS. Some of these errors are introduced when personnel changes occur at a facility and could be prevented by consistent training of facility staff responsible for RECLAIM compliance. CEMS failures include programming bugs within the computers, analyzer failures, daily calibration not properly performed, and failure to report daily emissions. Failure to capture valid data by the CEMS results in the emissions being determined using rule-prescribed Missing Data Procedures. Since CEMS are used on sources with the highest emission potential, their failure results in the most significant emission impact for a

facility. In response, most RECLAIM facilities with CEMS employ specialized staff to properly maintain the CEMS.

RECLAIM rules require that daily emission reports for major sources have to be submitted within a specified time frame. If daily emission reports have not been submitted on time, emissions have to be substituted with Missing Data Procedures. These daily reports are

*Formal facility representative training requirements should be considered as part of program design to help increase understanding of, and compliance with, program protocols*

generated by the CEMS and automatically transmitted to the District Central Station computer. RECLAIM facilities encountered numerous data transmittal problems in the early stages of RECLAIM. Facilities closely monitored these transmission problems and resolved them as they arose. However, these problems would also occur over weekends and holidays when facilities were not fully staffed. In response, RECLAIM rules were amended to allow limited occurrences in a year during which daily reports using actual emission data can be submitted late. In addition, the District developed an on-line web page, Web Access to Electronic Reporting System (WATERS), that provides facilities a listing of emission reports received. This system allows facilities to identify and correct reporting problems prior to data submission deadlines.

WATERS was further enhanced to assist facilities in reporting emissions from non-major sources. This helps eliminate issues related to composing electronic emission reports and report transmissions for non-major source emissions. Prior to this development, some smaller facilities without major sources employed third parties to transmit electronic emission reports to the District. These facilities lack the technical resources to handle computer issues. The enhancement of WATERS helped facilities eliminate operating costs and gain assurance that they are meeting the reporting requirements.

### **CEMS Accuracy Verification and Re-Certification**

Nearly 80 percent of emissions under RECLAIM are from major sources, which are monitored by CEMS. Therefore, the accuracy of these emission data is of utmost importance in determining if RECLAIM is achieving its emission goals. In order to assure the highest accuracy, several checks are imposed on CEMS – initial certification and re-certification when

modified, daily calibration checks, routine quality assurance and quality checks (QA/QC), and a semi-annual relative accuracy test audit (RATA).

Prior to installing a CEMS, the facility operator is required to obtain approval of its monitoring plan which describes all aspects of the expected emissions, the CEMS set up, the testing protocols, and all QA/QC procedures. Once the CEMS installation is complete, the whole system is required to go through a rigorous certification test to demonstrate

*Very detailed specifications are required for monitoring equipment*

that the CEMS can operate automatically and yield accurate data. Once a CEMS has been tested, the operator may certify its accuracy and submit the result for District approval. In the interim, the CEMS is considered to be “provisionally certified,” and can be used to determine emissions while the test results are reviewed by the District. In addition, the operator must conduct daily calibration and implement all QA/QC procedures. Once certified, a semi-annual RATA is required of most CEMS. CEMS that have been tested to yield better accuracy (less than 7.5 percent deviation) may extend the RATA due date to 12 months.

CEMS certifications and test reviews are conducted by District staff highly specialized in emission source testing methods. CEMS certifications are issued with detailed descriptions of CEMS components identified by serial numbers. Any changes to the identified components require the CEMS to be re-tested to assure accuracy. The test required depends on the actual components replaced. Replacement of major components, such as analyzers, requires a full-blown certification test. This rigorous testing scheme helps guarantee that the CEMS can provide accurate data. However, due to the wide variety of electronic equipment used and non-uniform data set as previously discussed, the data acquisition component of the CEMS is not checked within the certification process.

After overcoming the initial certification issues, improvements in RATA results were made. In recent years, RATA results show that CEMS are passing at an almost 100 percent rate. There have been issues with RATA not performed within required deadlines. Most of these issues were due to either human error of not scheduling the test in time, or delays caused by unexpected downtime of equipment. Data obtained by CEMS that do not pass daily calibrations or have missed RATA are considered invalid and emissions have to be substituted. In addition, CEMS

are highly sophisticated equipment that requires a specialist to keep them in proper operating condition. Most facilities have an on-site instrument specialist for the maintenance of their CEMS. Recent issues with CEMS mainly concern the low stack concentration found in some exhaust stacks. With the advent of NO<sub>x</sub> emission controls and lowered allocations, NO<sub>x</sub> concentration levels are approaching the lower detection limit of the test method used to prove the accuracy of CEMS. District staff worked with EPA to approve new testing methods to allow testing to be conducted for these low concentration exhaust streams.

### **Source Testing and Emission Verification**

Monitoring of large sources and process units is largely covered by the use of fuel meters. However, there are special installations that require actual stack flow monitors, for example, a thermal oxidizer that consumes minimal fuel and draws most of its heat input from the waste stream. In addition, RECLAIM rules require that concentration limits on large sources and process units to be periodically tested to show compliance with permit limits.

Source testing is required to be conducted according to pre-approved source test protocols and by personnel that are approved through the District Laboratory Approval Program (LAP). Standard source test protocols have been issued for testing of commonly found equipment. Four standard protocols were developed for boilers, furnaces, heaters, and internal combustion engines. These standard protocols are accepted in lieu of pre-approved source test protocols. In addition, a previously approved protocol can be re-used to test the same source.

Common problems associated with source testing of large sources and process units include late or missing tests, tests conducted not in accordance with an approved test protocol, and non-compliant test results. Late and missing tests and testing without approved protocols are the results of human errors and late scheduling. RECLAIM rules prescribe procedures when source tests show non-compliance. In cases where tests show emission levels above emission limits, in addition to incurring a violation each day after the test was conducted, emissions from the source have to be calculated using the higher tested level until the equipment is tested again and shown to be in compliance. In cases where tests show that flow monitors are not accurate, monitors

are required to be re-calibrated and re-tested after they are installed. Emissions in the meantime are calculated pursuant to Missing Data Procedures.

## Violations

RECLAIM violations typically fall into five basic categories: Allocation; Monitoring; Recordkeeping; Reporting; and Operational. Each type of violation presents unique challenges for a prosecutor – some of which may be avoided during program design, but some of which are inherent in any cap-and-trade program.

### Initial Allocation Violations

#### Impact on Prosecutions

In the first years of the RECLAIM program, there were virtually no prosecutions for exceeding an allocation. The initial allocations were generous so companies did not have higher emissions than their allocations. In addition, in the early years of RECLAIM, RTCs were so plentiful that, even if a company expanded its operations or otherwise increased its production significantly, RTCs could be purchased for little cost.

*Expect that there will be allocation disputes and provide an administrative process for resolution*

#### Impact on Penalties

Early allocation violations garnered relatively modest penalties. These violations were invariably due to the use of emission factors that had not yet been approved by the District, or were the result of using missing data provisions to calculate emissions because the facility was experiencing difficulty with its new monitoring or reporting systems.

#### Impact on the Hearing Board

Because variances from allocation exceedances were prohibited, the impact on the Hearing Board was limited to permit appeal disputes concerning the accuracy of the allocation contained in the RECLAIM facility permit. Facilities claimed that the allocation baseline was drawn from years in which their annual emissions were (for various reasons) under-reported in the annual emission reporting form that is filed with the District every year. Ultimately the District allowed these facilities to correct all prior data on which the allocation was based, but required these

corrections to be certified, and obligated these facilities to pay all back emission fees and late payment penalties.

### **On-Going Allocation Violations**

As the RECLAIM program progressed beyond its initial years, allocations became more representative of actual emissions at the facilities. At this point, certified monitoring systems were in place and there were far less disputes over emission factors or other allocation issues. Accordingly, allocation violations were rigorously enforced and penalized. However, a new set of problems were presented.

### **“Enforcement Lag”**

Audits of RECLAIM facilities are comprehensive, complicated, and time-consuming. The audit cannot be initiated until after the end of a compliance year, including its final reconciliation

*Build in procedures to minimize enforcement lag for audit processes*

period of 60 days. The audit itself may take months of work by an inspector, who must then prepare findings, organize supporting evidence, and write a final report.

By the time the audit has gone through its supervisory reviews, the prosecutor may be handed a case that is based on an audit that was commenced one or more years earlier. This “enforcement lag” may greatly reduce the time period for reviewing, investigating, and settling the matter or filing a criminal or civil complaint to prosecute the violation. If the violation warrants criminal prosecution, the one year criminal statute of limitations may have already been exceeded.

### **Impact on Prosecutions**

In a civil prosecution, the statute of limitations runs three years after the District “knew or should have known” about the violation. If the allocation violation resulted from errors made over a long time period, such as the use of improper emission factors, the statute may be deemed to have commenced running from the first date that the emission factor was referenced in a report to the District, as opposed to when the District conducted its audit of the facility. The District interprets the running of the statute to commence as of the date that the audit was finalized and a letter was sent to the facility informing it of its violation and the deduction taken from its allocation account. This interpretation, however, has not been tested in court.

### **Rolling Violations**

RECLAIM regulations provide that, when an allocation is exceeded, the excess emissions will be deducted from the facility's allocation for the subsequent year. However, since the audit is rarely, if ever, completed in time for the deduction to be taken from the allocation for the compliance year following the violating year, the District, at first, allowed companies to account for the excess emissions over several years following the audit findings. This would prevent the audit determination from putting a facility in violation of the following year's allocation before it was even notified of the results of the audit. This situation became known as a "rolling" violation. However, this practice was challenged in a lawsuit against the District, which asserted that RECLAIM rule language required the excess emissions to be made up in a single year (i.e. the year following the exceedance). As part of a settlement agreement, the District agreed to strictly require that, in the event of an allocation violation, the excess emissions must be made-up in the year following the determination of the exceedance, even if that results in a negative allocation balance to the company. The problem of rolling violations, therefore, is significant and, in the worst cases, can jeopardize the existence of a RECLAIM facility.

#### **Impact on Prosecutions and Penalties**

A negative allocation balance places a facility in the position of not being able to operate for a

*The rules should be clear as to whether a source may or may not make up an allocation exceedance over a multi-year period*

single day without violating its allocation. These businesses must purchase credits immediately, and in substantial quantity, in order to continue production. In doing so, a facility may exhaust its financial resources. In such cases it has been difficult to assess the appropriate penalty because the financial burden of the penalty on the violator is a factor required by statute to be considered in assessing penalties.

### **Scarcity and Affordability of Trading Credits**

A market-based program should anticipate different scenarios that may cause credits to become scarce and/or unaffordable. One such scenario in the RECLAIM program was the 2000/2001

*Be prepared for external market forces or manipulation that may affect the availability or affordability of credits*

California energy crisis. In what now appears to be a deliberate scheme to manipulate the California energy



market, electrical generation was taken off-line at critical times, thus driving demand up and creating a need for increased electrical generation. Southern California power plants are RECLAIM sources and could not meet the increased demand without purchasing additional credits in order to not exceed their allocations as many had not yet installed available retrofit emission control equipment. This made RECLAIM credits both increasingly scarce and unaffordable for many facilities. Consequently, there were a number of smaller RECLAIM sources that could not afford to purchase needed credits.

#### Impact on Prosecutions and Penalties

To address this situation, energy companies were required to comply with all RECLAIM requirements, notwithstanding the need to “keep the lights on.” Structural buyers and other affected sources were placed under an Order for Abatement, which allowed the sources to continue operation under conditions imposed by the Hearing Board. Penalties for these violations were assessed under a special penalty policy based on the reasonably foreseeable RTC price for the compliance year in which the allocation violation occurred.

#### Real Cases, Real Stories: The California Energy Crisis

The 2000/2001 California energy crisis had a significant impact on the RECLAIM prosecution program. Manipulation of the California energy market led to abnormally high demand for electrical generation, which led to high demand for NO<sub>x</sub> RTCs from the utility sector in 2000. The utility sector purchased 60% of the NO<sub>x</sub> RTCs expiring in December 2000. NO<sub>x</sub> RTCs increased from approximately \$1,800 per ton in 1999 to over \$45,000 per ton in 2000.

Both the Los Angeles Department of Water and Power (LADWP) and AES Alamos, LLC (AES) – major electrical generators in Southern California – believed that the power crisis, as managed by the California Independent System Operator (ISO), relieved them of their compliance responsibilities under RECLAIM. In various meetings with these facilities in 2000, the District was told that both sources intended to operate as necessary to meet energy demand, without paying any penalties and without suffering any future allocation deduction for any allocation exceedances. Adding to this pressure on the program was the Governor’s declaration of a state of emergency that directly affected the District’s enforcement authority over these sources.

The compliance issues were resolved by placing the LADWP under an Order for Abatement that would allow the department to exceed its annual allocation under conditions imposed by the AQMD Hearing Board. A \$14 million dollar penalty (in the form of environmental projects) was negotiated for the anticipated allocation violation. This limited the facility's flexibility in selling excess energy to the ISO for use by consumers around the state. The situation with AES, which was operating daily in violation of its annual allocation, was resolved by imposing mitigating conditions on its permit as allowed by the RECLAIM rules. In addition to the allocation exceedance deduction to offset the excess emissions, AES agreed to pay a \$17 million dollar cash penalty for its RECLAIM violation.

The rapid inflation of RTC prices severely affected a number of industrial sources that either found it economical or unavoidable to rely on RTCs for compliance with RECLAIM instead of relying on the installation of NOx controls. Because prices increased dramatically over a relatively short period of time, facilities did not have enough time to add controls before the end of their compliance year. The District issued a special penalty policy for these violations utilizing an economic benefit approach. These companies were required to pay a penalty based upon the RTC price reasonably foreseeable prior to the energy crisis, which was determined to be \$7.50 per pound; make up all exceedances; and install any feasible NOx controls. This approach recovered the economic benefit of the violation and made the environment whole, while avoiding extensive business closures. Any other approach would have made these companies victims of energy market manipulation and would not have served the interests of justice.

### **Fraudulent Trading Practices**

Fraud must be anticipated in the design of a trading program. Significant damage to the program and to individual facilities may be caused by the making of false statements.

#### Impact on Prosecutions and Penalties

Clearly the harshest penalties for fraud based on false statements must be imposed on the party who knowingly sells or trades invalid credits. These cases are either subject to maximum civil penalties or referred for criminal prosecution. The more difficult cases concern facilities that

traded in apparent good faith, not realizing the trade involved invalid credits. In these cases, companies purchased credits that were never delivered. The consequences of such fraudulent transactions placed the company in violation of its current allocation and forced the company to repurchase valid credits. These cases require careful review to determine the extent to which the company knew or should have known that it was in danger of placing itself in violation when it participated in the trading transaction. Compliance history, emission reports, and internal company documents will reveal this information and dictate how substantial the civil penalty needs to be in order to ensure future compliance.

#### Real Cases, Real Stories: Fraud in the RECLAIM Market

Fortunately, RECLAIM has experienced only one case of fraudulent trading practices. This matter, which as of this date is a pending federal criminal prosecution, involved a prominent individual who participated in the design of the RECLAIM trading program and who participated in a credit exchange business during the implementation of the program. This business engaged in an extensive scheme to defraud facilities and individuals that trade in RTCs or allegedly on RTC sales for RECLAIM compliance.

This scheme spanned more than four years and involved the fabrication of contracts, the forgery of signatures, and the impersonation of corporate executives. The business was operated as a shell game or “Ponzi scheme,” obtaining millions of dollars from clients that were supposed to be held in trust pending the closing of RTC sales and subsequently using those funds to pay off earlier debts of the enterprise.

This scheme came to light when inconsistencies in trading practices in RTC trades administered by the business were noticed by District staff. The business was issued a Notice of Violation for making false statements in connection with various RECLAIM trading transactions. After further investigation by the District, the matter was submitted to the U.S. EPA Criminal Investigation Division, which, after review and investigation, referred the matter to the U.S. Department of Justice for criminal prosecution.

Over 20 RECLAIM facilities were affected in some way by this fraudulent activity. A number of these companies were substantially harmed by paying for credits that were never delivered

and then having to pay for those credits again in order to remain in compliance. And while all of the allocation exceedences caused by this criminal activity were made up from future allocations, the “black eye” this caused to the RECLAIM program has left a legacy of lasting harm.

### **Late Entry Facilities**

Some businesses entered into the RECLAIM program more than a year or two after program implementation. These were businesses that located to the Basin after RECLAIM had been adopted and those that unsuccessfully challenged their inclusion in RECLAIM. Allocations for these facilities were determined as if they had been in the program from the start, which meant that some of these late-entering sources were subject to a steep declining allocation balance without the advantage of a generous initial allocation. Some of these companies found themselves in violation in the first year, usually due to problems with monitoring and reporting requirements (which resulted in the imposition of missing data provisions, putting them over their allocation.).

### **Impact on Prosecutions and Penalties**

Penalties in these cases depended heavily on the facts that led to the violations, understanding that some temperance was appropriate due to the facility’s inexperience with the program.

### **Monitoring Violations**

Accurate emissions monitoring is the backbone of any cap-and-trade program. In order to be certain that annual emission caps are not being violated, it is imperative that monitoring systems be certified, tamper-proof, calibrated, and maintained. Accordingly, the RECLAIM program relies on the use of certified CEMs, sealed fuel meters, and equivalent technologies to monitor emissions from RECLAIM facilities. In addition, there are requirements for regular testing and calibration of monitoring equipment.

### **Impact on Prosecutions**

Monitoring requirements give rise to a panoply of potential violations – from failing to timely recertify a CEMs to using the wrong kind of fuel meter. Since monitoring requirements generally

<i>It is imperative that monitoring systems be certified, tamper-proof, calibrated, and maintained</i>
--

go hand-in-hand with reporting requirements, these violations are relatively easy to establish and prove, up to and including the number of days of violation.

#### Impact on Penalties

Penalties for monitoring violations need to be high enough to ensure that there is no incentive to disconnect the monitoring rather than show actual emissions during a period of facility upset or unusually heavy production. It is to be expected that monitoring systems will sometimes fail, and RECLAIM rules provide for this eventuality by giving facilities time to make repairs and more reasonable missing data provisions to apply during that brief period of time. Penalties, therefore, need to be designed to deter deliberate tampering with monitoring systems in order to take advantage of potentially reporting more favorable emissions.

#### Impact on the Hearing Board

The Hearing Board is authorized to grant variances from monitoring requirements provided that all statutory requirements are met. Since, by law, the Hearing Board can not grant a variance from either the annual allocation or missing data provisions, care must be taken to ensure that a variance is granted from limited requirements. For example, the Hearing Board may grant a variance from the requirement to operate only with a certified CEMs; however, it should be sure to emphasize that the variance does not relieve the petitioner from calculating emissions using missing data and that the petitioner must comply with its allocation.

#### Real Cases, Real Stories: Missing Data

Missing data is a critical program safeguard, but two cases – Exxon Mobil and Shultz Steel – illustrate the advisability of some discretion for ameliorating the effects that missing data can have on the market as well as individual companies.

The Mobil refinery is a RECLAIM facility that operates a number of major sources requiring CEMs monitoring systems. Mobil experienced programming bugs with the Data Acquisition System, or DAS, that is the reporting software for the CEMs data. The software problems made it necessary for Mobil to operate under variance for two years, which provided time for Mobil to eventually solve the problems but did not affect the application of missing data, which resulted in massive NO<sub>x</sub> emissions (over one million pounds) in excess of its annual allocations for both

years. In order to avoid a serious shock to the NOx RTC market – had the exceedances been deducted from a single compliance year and thus forcing Mobil to purchase equivalent RTCs – the District negotiated multi-year deductions from Mobil’s RECLAIM allocation.

The application of missing data can also threaten the existence of an individual company. In the case of Shultz Steel, many of its fuel meters failed to operate or to operate accurately, resulting in the application of missing data covering several compliance years. The resulting exceedances were in excess of 100,000 pounds. The company was placed under an order of abatement that set forth a multi-year deduction schedule, plus the installation of low NOx burners. These measures allowed the company to remain in business.

But, as stated earlier, the exercise of enforcement discretion with respect to missing data was challenged in a lawsuit against the District, with the District agreeing to not spread out exceedances over multiple compliance years. In designing future trading programs, careful consideration should be given to authorizing some procedure for the exercise of discretion in cases where the market or individual companies might experience disastrous consequences.

### **Recordkeeping Violations**

Records to substantiate emissions data, conduct of tests, and filing of reports must be kept on-site and made available in the event of an inspection. Prosecutions of these types of violations do not present any unusual or special challenges.

### **Reporting Violations**

Next to monitoring, reporting is the most important element to ensure compliance with a cap-

*Next to monitoring, reporting is the most important element to ensure compliance with a cap-and-trade program*

and-trade program. RECLAIM requires a range of reporting, from daily electronic reporting of emissions from major sources to the final annual

emissions report. Reporting must be timely and accurate.

### **Impact on Prosecutions**

Reporting must be timely and accurate. Prosecution of violations is relatively straight forward.

Impact on Penalties

Reporting violations may be minor, such as failing to report emission from small sources electronically for a day or two because of technical problems; or more significant, such as filing an inaccurate annual report because the facility was using unapproved emission factors, thereby concealing an allocation violation. Penalties will vary accordingly.

**Lessons Learned**

- Equipment data logically stored in an electronic database supports efficient data compilation.
- Computer application development is resource intensive.
- Inspection staff needs to be re-trained to perform technical emission reviews.
- A uniform data set would allow efficient checking of emission reports.
- An oversight team can help coordination and ensure consistent program implementation.
- Smaller facilities are less sophisticated and need technical assistance.
- Facility training on an annual basis should be considered.
- Rigorous verification of CEMS accuracy, thorough plan check and approval, and specialized staff is needed.
- Skilled technical staff is needed to maintain proper operation of CEMS.
- Monitoring equipment and testing procedures need to keep pace with advances in emission controls.
- Periodic verification of monitoring equipment for smaller sources is also needed.
- Specialized staff is needed to review and approve source tests
- Emission calculation methodology during non-compliant periods needs to be specified.
- Expect that there will be allocation disputes and provide an administrative process for resolution.
- If an audit process is utilized for annual compliance determinations, build in procedures to minimize enforcement lag.
- The rules should be clear as to whether a source may or may not make up an allocation exceedance over a multi-year period.
- Be prepared for external market forces or manipulation that may affect the availability or affordability of credits.

- Fraud must be anticipated in the design of a trading program.
- It is imperative that monitoring systems be certified, tamper-proof, calibrated, and maintained.
- Next to monitoring, reporting is the most important element to ensure compliance with a cap and trade program.
- Clear guidelines for enforcement action provides for consistent applications of rule provisions.
- Regulated sources need to have timely audit results.



## Chapter Three – Mid-Course Corrections

**Authors:** Carol Coy and Danny Luong

**Contributors:** Fortune Chen, Chris Hynes, Don Nguyen, Paul Park,  
Cathy Ragland, Sandys Thomas and Susan Tsai

In 2000 and 2001, the California energy market experienced a period of high power demand and rolling blackouts. During this period, there was a shortage of power supply. As a result, many power producing facilities within the Basin increased their power generation. The corresponding increases in NO<sub>x</sub> emissions caused a sudden surge in the NO<sub>x</sub> RTC prices that adversely impacted other RECLAIM participants and the overall emission reductions of the program.

RTC prices started to increase rapidly in June of 2000. Over the summer of 2000, emissions from power producing facilities increased sharply when compared to emissions from same facilities in 1999. The District Governing Board directed staff to examine the RECLAIM program and recommend actions to stabilize RTC prices. As a result, staff submitted a report, Potential Backstop Measures to Stabilize NO<sub>x</sub> RECLAIM Trading Credit Prices, to the District Governing Board in January, 2001. At the same time, the Governor of California declared a state of emergency in response to the power crisis. In May 2001, the District's Governing Board adopted RECLAIM rule amendments to reduce the RTC demand from power producing facilities and to stabilize the sharply increasing NO<sub>x</sub> RTC prices.

*Plan for the inevitable – mid-course corrections will be needed*

### Amendments to Reduce RTC Demand from Power Producing Facilities

Prior to 2000, most power generating units at power producing facilities were not retrofitted with NO<sub>x</sub> emission reduction equipment. Therefore, a significant increase in emissions resulted when these power generating units were forced to run full-time during 2000. The rule amendments isolated the power producers from the rest of the RECLAIM market. An Emission Mitigation Program was established to fund emission reduction projects to offset the increased emissions from power producing facilities. In addition, power producing facilities were required to submit plans to install BARCT on all existing power generating units by the end of 2004.

Table II-3-1 shows the emission comparison for power plants and other facilities in compliance year 2000 and 2005. The table includes RTCs held, initial allocations and the differences for each category. The substantial reduction in emissions from power plants is illustrated in the shaded boxes.

**Table II-3-1  
Power Crisis – Emission Comparison**

	<b>Compliance Year 2000</b>				
	<b>Non-Power Producing Facilities</b>		<b>Power Producing Facilities</b>		<b>All Facilities</b> <b>(a) + (b)</b>
	<b>(a)</b>		<b>(b)</b>		
	<b>RTCs Held</b>	<b>Initial Allocations</b>	<b>RTCs Held</b>	<b>Initial Allocations</b>	
Allocations [tons]	12,345	14,895	4,852	2,302	17,197
Emissions [tons]	13,703		6,788		20,491
Difference [tons] (Exceedance)	-1,358	1192	-1,936	-4,486	-3,294

	<b>Compliance Year 2005</b>				
	<b>Non-Power Producing Facilities</b>		<b>Power Producing Facilities</b>		<b>All Facilities</b> <b>(a) + (b)</b>
	<b>(a)</b>		<b>(b)</b>		
	<b>RTCs Held</b>	<b>Initial Allocations</b>	<b>RTCs Held</b>	<b>Initial Allocations</b>	
Allocations [tons]	10,457	10,779	2,027	1,705	12,484
Emissions [tons]	9,111		445		9,556
Difference [tons] (Exceedance)	1,346	1,668	1,582	1,260	2,928

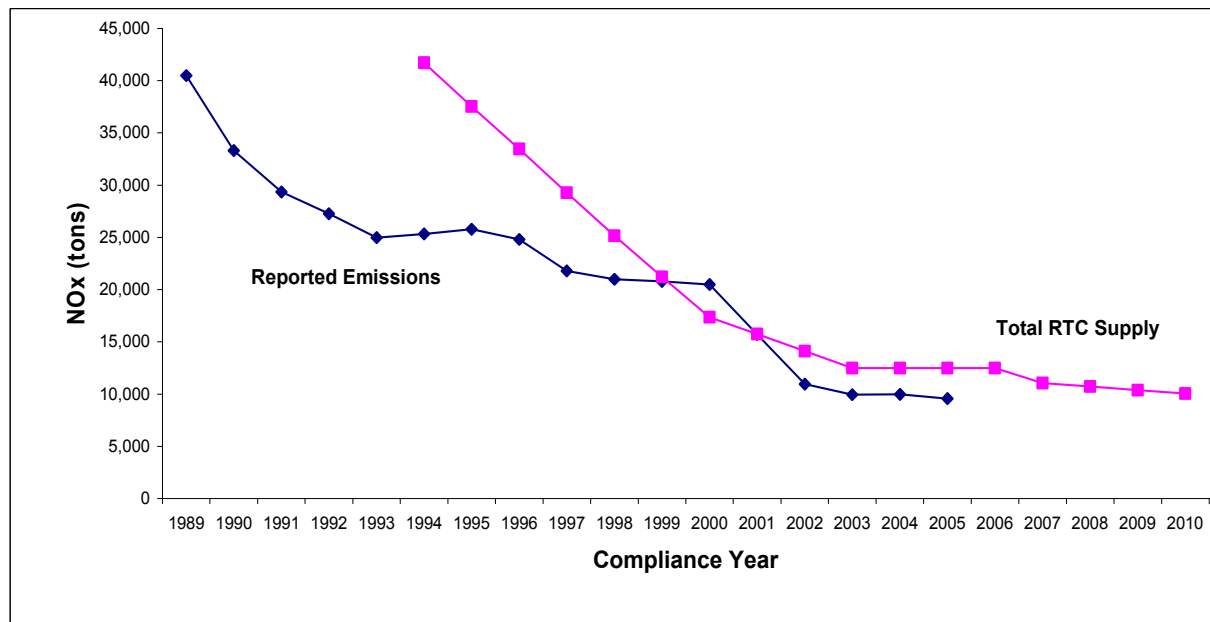
Table II-3-2 shows the percentage of unused NOx RTCs for each year of the program, from 1994 through 2005. It illustrates the generous initial allocations and the effect of the power situation and mid-course correction. It also illustrates the fact that actual emissions have decreased by over 60 percent since program inception.

**Table II-3-2**  
**Annual NOx Emissions for Compliance Years 1994 through 2005**

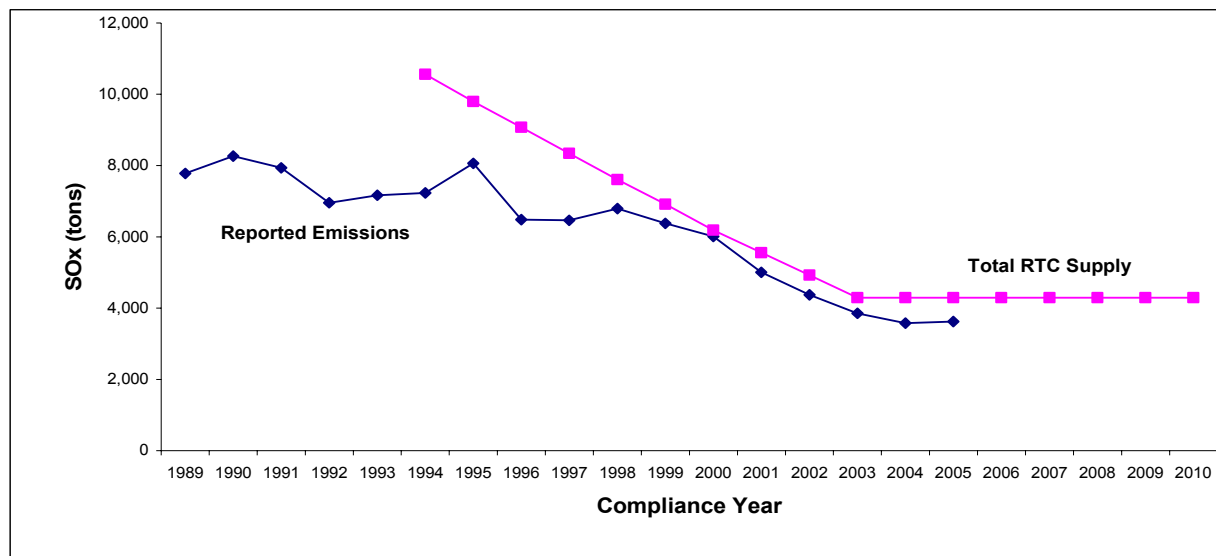
	<b>Annual NOx Emissions (tons)</b>	<b>% Change from 1994</b>	<b>Total NOx RTCs (tons)</b>	<b>NOx RTCs Left Over (tons)</b>	<b>NOx RTCs Left Over (%)</b>
1994	25,314	0.0%	40,127	14,813	37%
1995	25,764	1.8%	36,031	10,267	28%
1996	24,796	-2.0%	32,017	7,221	23%
1997	21,786	-13.9%	27,919	6,133	22%
1998	20,982	-17.1%	24,678	3,696	15%
1999	20,775	-17.9%	21,013	238	1.1%
2000	20,491	-19.1%	17,197	-3,294	-19%
2001	15,721	-37.9%	15,693	-28	-0.18%
2002	10,943	-56.8%	14,044	3,101	22%
2003	9,942	-60.7%	12,484	2,542	20%
2004	9,953	-60.7%	12,477	2,524	20%
2005	9,556	-62.3%	12,484	2,928	23%

Figures II-3-3 and II-3-4 illustrate the reported NOx and SOx emissions from 1989 to 2010 and available RTCs for each year of the program.

**Figure II-3-3**  
**NO<sub>x</sub> Emissions and Available RTCs**



**Figure II-3-4**  
**SO<sub>x</sub> Emissions and Available RTCs**



## **Other Amendments Affecting Non-Power Producing Facilities**

The May 2001 amendments also required non-power producing facilities with annual NO<sub>x</sub> emissions greater than 50 tons per year to file compliance plans to show how annual allocations through the year 2005 will be met. These facilities could install BARCT, purchase RTCs, or both. RTC purchases had to be secured prior to approving the compliance plan. Facilities with annual NO<sub>x</sub> emissions between 25 and 50 tons were also required to submit a compliance forecast report. These forecast reports were meant to be planning tools for facilities to look forward and plan for annual allocation compliance. However, provisions of these forecast reports, unlike those of the compliance plans, were not enforceable.

## **Amendments Affecting the Market and RTC Supplies**

In 2001, six rules were adopted to allow pilot credit generation programs for on-road vehicles, heavy-duty yard hostlers, marine vessels, ship hoteling operations, truck trailer refrigeration units, truck stops, and agricultural pumps. These rules provide the protocols for generating emission reductions from mobile and area sources. These pilot generation rules were subsequently approved by EPA. Several projects were funded by the District with funds from the emission mitigation program. These projects were to re-power marine vessels and to replace diesel powered agricultural pumps with electrical pumps. Only one project, using the marine vessel rule, was initiated by a private party. However, that party applied the emission reductions to another District mobile source program in lieu of reductions to be obtained from rideshare plans, as allowed by Rule 2202 - On-Road Motor Vehicle Mitigation Options.

Amendments were also made to RTC trade requirements to address concerns regarding availability of trade information. RECLAIM rules were amended to require:

- Trade registrations be submitted within five business days of reaching an agreement;
- Actual owners of RTCs traded be identified; and
- Forward contracts and contingent rights to trade be reported within five days of reaching an agreement.

## **Lessons Learned**

- Closely monitor the status of the program.
- Ensure adequate mechanisms are available to allow for timely program changes.
- Emission controls cannot be installed in time to respond to sudden market up-swings.
- Built-in command-and-control requirements should be automatically triggered when substantial problems occur to avoid long lead times needed for emission control installation.
- Make alternative sources for generating emission reductions available.

## **Chapter Four – Market Issues**

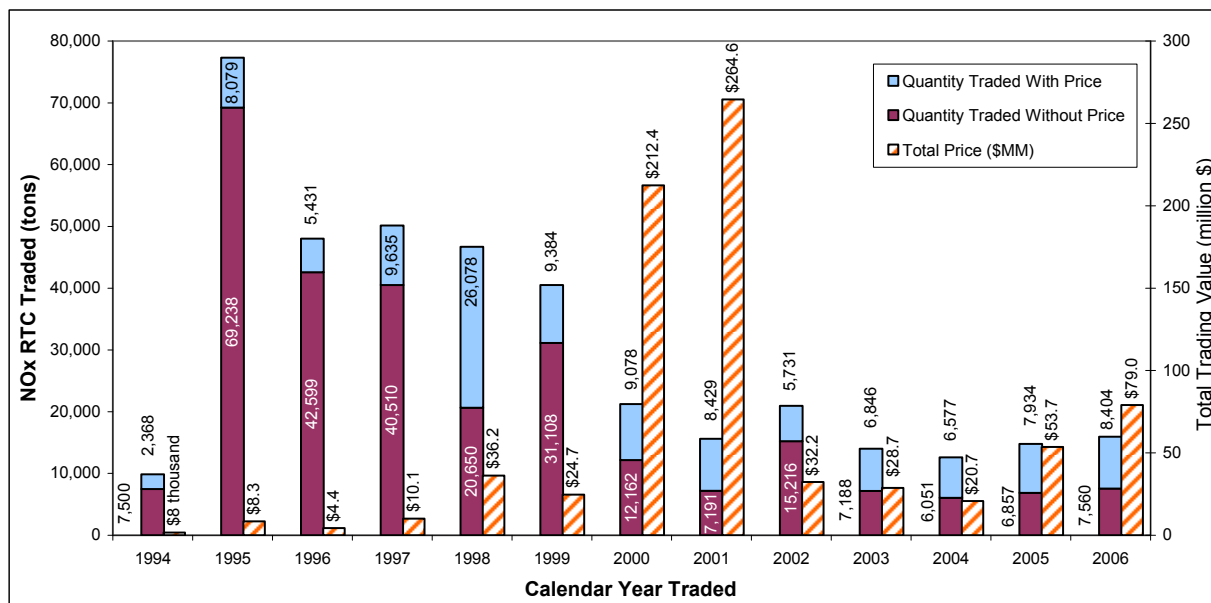
**Authors: Carol Coy and Danny Luong**

**Contributors: Fortune Chen, Chris Hynes, Don Nguyen, Paul Park,  
Cathy Ragland, Sandys Thomas and Susan Tsai**

Each RTC is denoted as one pound of NO<sub>x</sub> or SO<sub>x</sub> emissions allowance with a specific expiration date and one-year life, and can be traded anytime through the end of the 60-day reconciliation period following the expiration date. Each facility is issued allocations for all future years, which provides the participating facilities with knowledge about their future emission reduction requirements. With known emission goals, a facility can plan for future operations. It can either plan for additional emission reductions or secure any required RTCs through trades. Thus, the trading aspect of RECLAIM is a key element in enabling facilities to achieve RECLAIM compliance at minimum cost with maximum flexibility.

The RTC market has been active since the inception of the RECLAIM program in 1994. The RECLAIM market recorded a total of over 500,000 tons RTCs traded at a total value exceeding 863 million dollars. Figures II-4-1 and II-4-2 illustrate the distribution of RTCs traded in terms of volume and value. Any person may choose to participate in the RTC trading market. In addition to RECLAIM facilities, brokers and investors have been active participants of the market. Lately, mutual funds and foreign entities have also invested in RTCs.

**Figure II-4-1**  
**Total Quantity of NOx RTCs Traded**



**Figure II-4-2**  
**Total Quantity of SOx RTCs Traded**

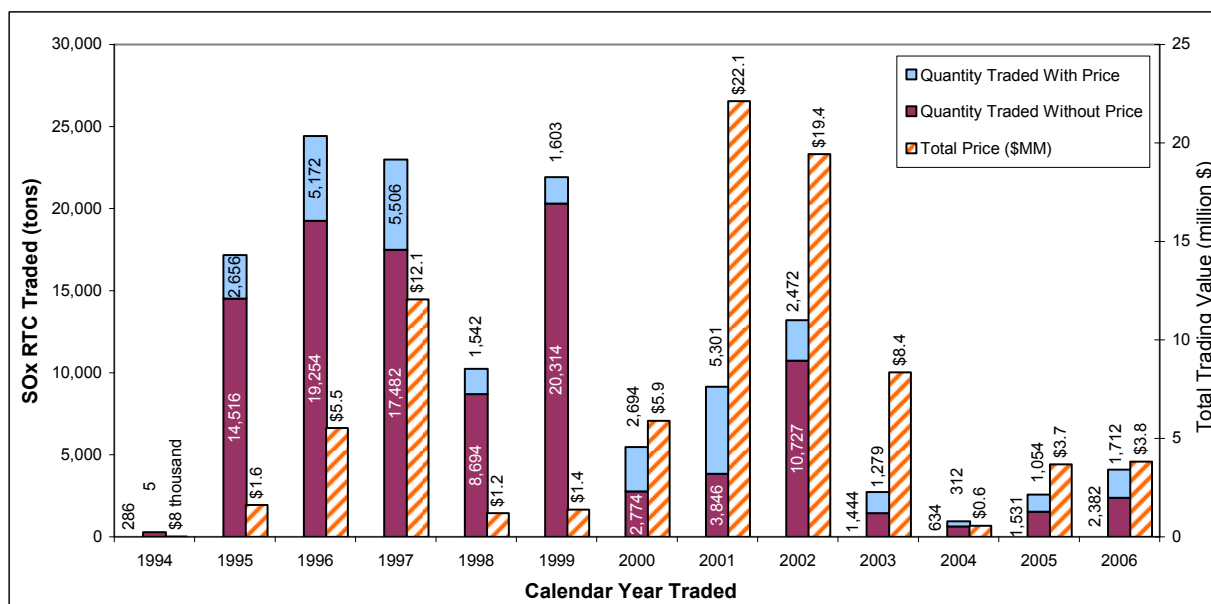
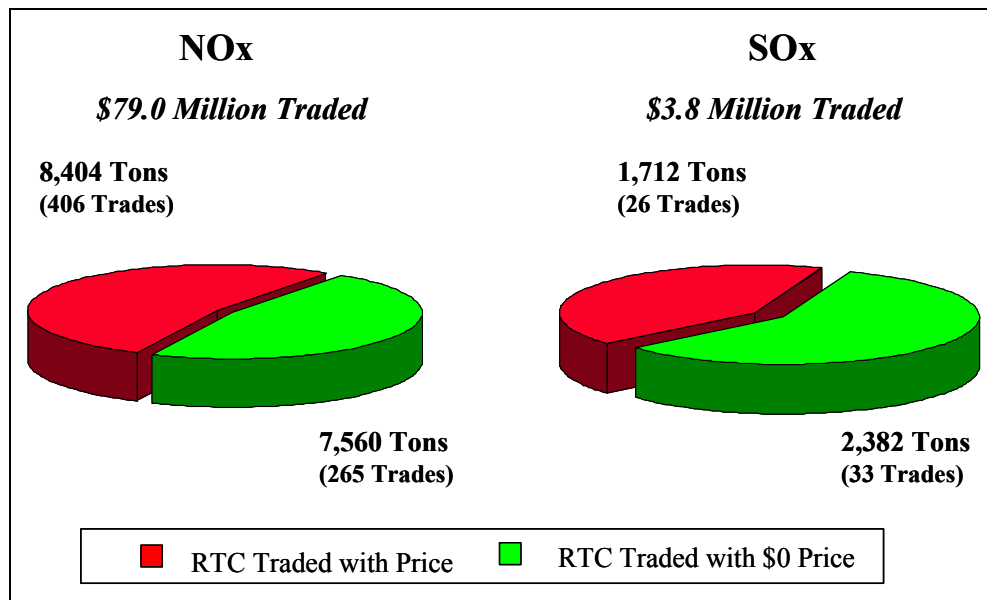




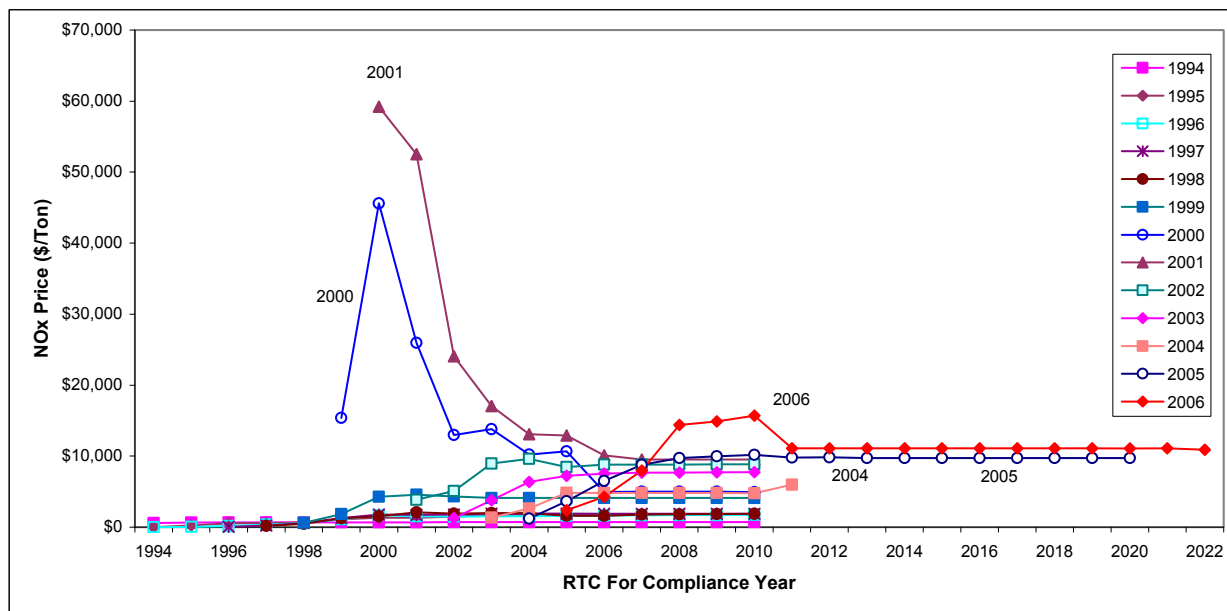
Figure II-4-3 illustrates trading activity in 2006 and illustrates that a large portion of trades do not have a price reported. This occurs with transfers to brokers for subsequent sale and between facilities under common ownership.

**Figure II-4-3**  
**Calendar Year 2006 Trading Activity**

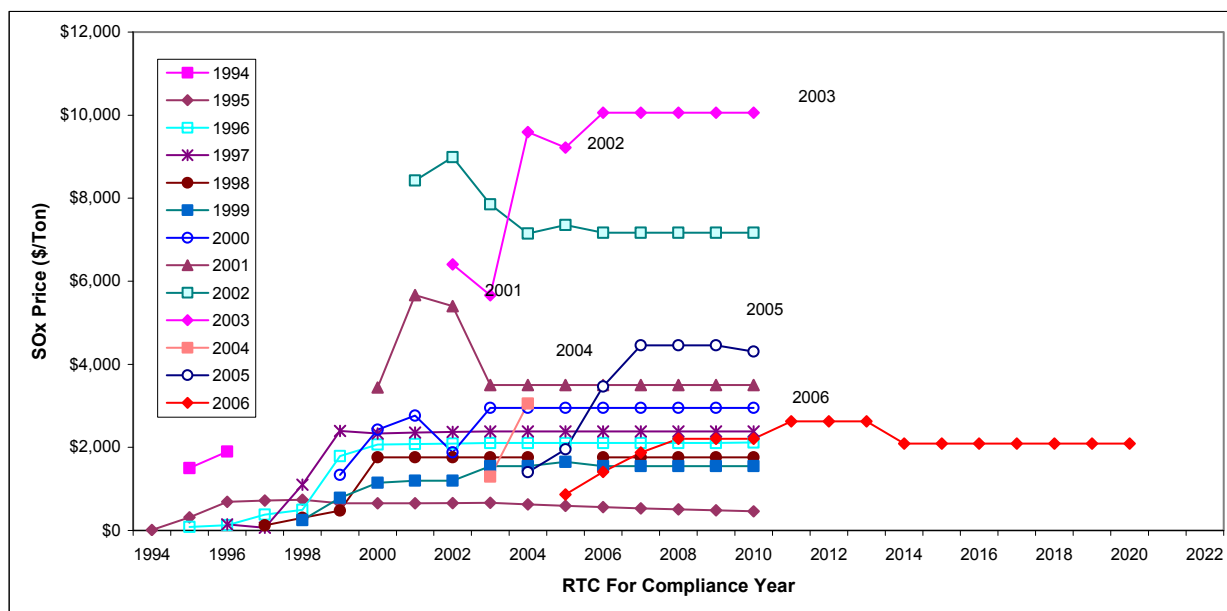


Figures II-4-4 and II-4-5 illustrate yearly average prices for NO<sub>x</sub> and SO<sub>x</sub> RTCs, respectively, for 1994 through 2006. Each line denotes prices that were seen in that compliance year for all trades. After 2005, credits beyond the year 2010 started to be traded. The spike for NO<sub>x</sub> prices in 2000 and 2001 is clearly evident.

**Figure II-4-4**  
**Yearly Average Prices for NO<sub>x</sub> RTCs 1994 through 2006**



**Figure II-4-5**  
**Yearly Average Prices for SO<sub>x</sub> RTCs 1994 through 2006**



## Tracking Mechanisms

RTCs issued are entered into the RTC Listing, which is the official record of ownership, maintained exclusively by the District. Under the RTC Listing, RTCs are further differentiated by pollutant, zone (i.e. Coastal or Inland), cycle, and expiration year. The RTC Listing is set up with a double entry system – each transaction is always reflected by a debit and a credit entry. Pursuant to RECLAIM rules, RTCs ownership is not transferred unless it is registered in the RTC Listing.

When trading RTCs, the buyer and seller are required to jointly file a transfer registration identifying the type and quantity of RTCs being traded. Data on the trade registration are then entered into the RTC trading program. The trading program checks all rule requirements and

*Tracking mechanisms are key to program enforcement*

ascertains that the seller has sufficient RTCs in its account for sale. If all requirements are met, the RTC Listing is updated with the transfer by debiting the seller account and crediting the buyer account with the traded amount of RTCs.

Under the Acid Rain Program, allowances are tracked by serial numbers. The RECLAIM program does not follow that practice. A serial number system, if incorporated at the start of the program, tracks the origin of the credits in cases of fraud or unauthorized transactions. However, the use of it does not prevent fraudulent practices by private parties. Serializing credits after trades have occurred is not practical.

## Authenticating Trades

A buyer of RTCs must have an account before they can own credits. An officer of the entity registering for an account must designate authorized representatives who can trade RTCs on their behalf. The signatures of these authorized representatives are also collected at the time of account establishment. As part of the trade approval process, each trade registration submitted to the District is verified to ensure that the authorized signatures are valid. Internally, each trade is reviewed and approved by three separate staff members. Trade confirmation letters are signed

*Take steps to safeguard against mistakes or fraudulent trades*

by the executive in charge of the division. The signed confirmation letters of the RTC transfer are mailed to both the buyer and seller for their records and serve as notifications that RTC transfer occurred. These are the steps taken to safeguard against mistakes or fraudulent transactions being registered.

### **Trends in RTC Trades**

The District has always taken a hands-off policy on the RTC market, unlike the Acid Rain Program which retains a small portion of allowances for a year-end auction. Initially, RTCs trades were generally held between two RTC holders or brokered through a third party or agent. In a brokered transaction, the seller escrows the RTCs by transferring them without price into the broker's account, then the broker will transfer the RTCs to the buyer's account after certain trade conditions are met (e.g. transfer of funds into the broker account). Later, swap trades started to occur where, rather than exchanging money, RTCs were bartered for other emission reduction instruments such as RTCs of another expiration period or contaminant (e.g. NO<sub>x</sub> for SO<sub>x</sub>) or ERCs of another contaminant. In the early stage of RECLAIM, some entrepreneurs emerged but they did not result in significant transactions (one investor sold RTC certificates as commemoratives).

After the deregulation of power plants in California, some energy traders started purchasing and holding RTCs because some electricity generation contracts included requirements to offset emissions from power generators. The spike in RTC prices during the California power crisis

*Trading markets evolve over time*

highlighted RTCs as an investment commodity. Since then, mutual funds and private investors started to trade RTCs.

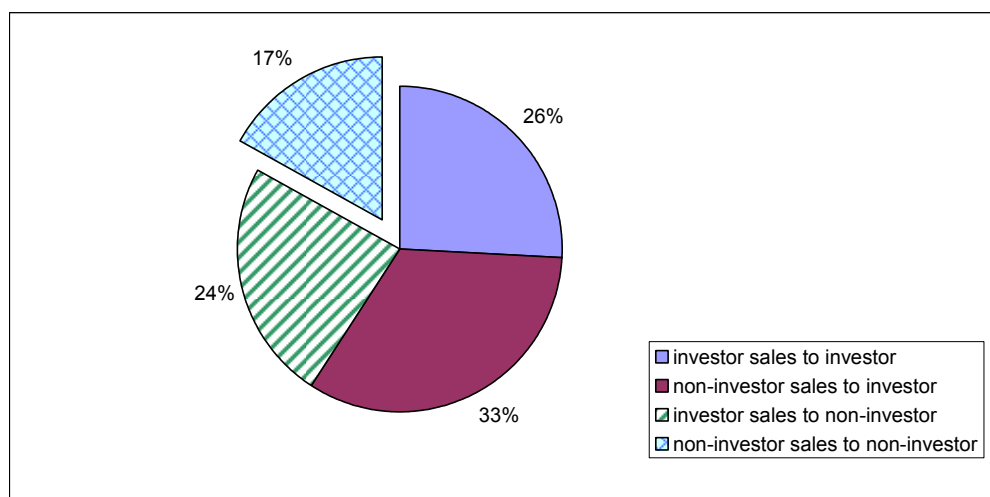
Unlike other market participants, these traders have no obligation to offset emissions and are in the market strictly for profit. At about the same time, financial risk-hedging activities, such as trade options and forward contracts, started to emerge. Trade options are contingent rights to buy or sell a set of RTCs at a pre-agreed price. Forward contracts are agreements to trade a set of RTCs at a set price at a future date. Last year, foreign entities started to invest in RTCs. Their participation introduced new potential jurisdictional issues. The District responded by requiring that parties that do not reside in California consent to California law and the jurisdiction of

California courts. The focus of these investors is mainly in RTCs valid for future years, as prices for these credits are the most speculative.

The main objective of investors in a market is to seek profit through trading. On the other hand, investors can provide the capital needed to produce the commodity and, in this program, install control equipment. This is part of the market mechanism that was envisioned to motivate additional emission reductions that may not otherwise occur. However, the issue of hoarding can be of concern. If the supply of future RTCs is controlled by investors, the functioning of the market as a means to sustain economic growth can be affected.

Figure II-4-6 illustrates the different parties involved in buying and selling of NO<sub>x</sub> RTCs, in 2006.

**Figure II-4-6**  
**Shares of Investor-Involved Trades Based on Value Traded**



## Trade Reporting

Initially, RECLAIM rules did not regulate when RTC trades had to be registered. Traders registered trades as they deemed appropriate. As a result, there were many RTCs held under brokers' account and trading of these RTCs were not reported until the eventual buyer wanted to have the RTCs registered under their account. In the interim, brokers acted as the keeper of the RTCs and some trades were not reported to the District. The delayed or missed trade reports were identified as one of the contributing factor to the sudden jump in RTCs price during the

California power crisis. Market prices were increasing, but that information was not reported to the District because the transactions were never recorded. This practice also played a part in the one known case of fraudulent trades committed by a broker.

RECLAIM rules were amended in 2001 in response to the price spike caused by the California power crisis. Among other amendments, changes to the market included requirements for reporting RTC trades within five business days of trade agreement and reporting trade agreements related to options and forward contract. At the same time, the

*Timely trade reporting is recommended to better monitor prices and provide market information*

District committed to provide more timely trade information and instituted procedures to post trade information on the District website as trade registrations are processed. In addition, the website also contains scanned reports of options and forward contracts, and the names of authorized trading representatives. This information is identified as essential to the efficient functioning of the market.

RTC price is essential information in the market. RECLAIM rules require the District to monitor price and conduct program evaluations if annual average RTC prices rise above a preset level. The registered prices for RTCs are averaged on annual basis. Several market activities complicate what is seemingly a straightforward price calculation. Trades via brokers are the most common type of trades. These trades result in two registrations – one between the seller and the broker and a second one between the broker and the buyer. To avoid double-counting of sales price and skewing the price average, the transfers between sellers and brokers are reported without price and the actual transaction prices are reported in the second sets of trades.

Another type of trade that can skew the market price is swap trades, where RTCs are exchanged for a wide variety of other goods in place of money. In order to include the values of the swapped RTCs, the trading partners are required to report an agreed-upon value of the RTCs. The reported values in these trades may not reflect the real market value of the RTCs and may be a source of misinformation.

Some trades involve the transfer of the rights to a stream of RTCs starting a certain year and extending infinitely in time. These streams of RTCs are referred to as “infinite-year RTC

blocks”. Prices for infinite-year block RTCs are often negotiated as price per pound for the whole block instead of a price per pound per year. When reporting prices for these blocks of RTCs (\$/pound/year), it is up to the trading partners to decide on how many years to spread the value of RTCs based on the price per pound of RTCs paid. This often leads to arbitrary annual prices and does not reflect the market price of the individual year RTC. The District is currently conducting a review of the average price calculation so as to isolate the effect of these infinite-year RTC block trades from the annual average RTC prices.

Buyers of RTCs often seek to conceal their identity when shopping for RTCs. This concealment of identity is especially critical if a buyer is purchasing a large quantity of RTCs. These buyers will need to purchase from several sellers over a long period of time in order to acquire the sufficient amount of RTCs needed. If that need is known, the buyer may have to pay a premium for the necessary RTCs. Therefore, buyers tried to conceal their identity by securing options and forward contracts. Recent rule amendments have allowed confidentiality of the parties, but require trade information be submitted to the District within 5 days of an agreement, to enable better market signals.

## **Lessons Learned**

- Make trade information available as early and completely as possible.
- Consider different price thresholds for long-term credits.
- Set up safeguards against forged or fraudulent trades.
- Serializing credits, if desired, needs to be incorporated prior to the start of trading.
- Consider setting up safeguards against credit hoarding.

## Chapter Five – Information Management

**Authors: Chris Marlia and Roberta Lewis**

The RECLAIM program has four information streams:

- Facility permit;
- Emission credit trading;
- Emission monitoring and reporting; and
- Compliance.

Automated systems aid in compiling and tracking data from all of these information streams and maintaining this data in a central database helps to bring the information streams together. Automation also allows some of the data to be accessible by outside users, including the regulated community and the public.

*Effective information management systems help program tracking, enforcement, and trades*

### Facility Permit

The facility permit format developed for RECLAIM captures device-based information for all sources – major, large, process units, and other – within the facility bubble. All of the permit parameters that define the emissions from each device within the facility are stored in the central database. This information provides a direct link to the actual emissions that are tracked through the monitoring and reporting requirements of RECLAIM.

The facility permit system is a custom client-server application on the central database that provides data entry and print capabilities for permit processing engineers to generate facility permits for RECLAIM and Title V facilities. The application consists of two modules, a front-end for entering and capturing facility permit data into the central database during permit processing and for administering the data, and a printing module that extracts facility permit data from the central database and places it into the correct location within the facility permit format.



## Trading

The RECLAIM BBS, an electronic bulletin board, provides a convenient place for facilities and their brokers to post notices of emission credits available or needed and to view trade information. The BBS is a custom personal computer-based application that is accessed externally through a modem over the telephone network. The data on the BBS is refreshed daily from the trading data stored in the centralized database. Much of the activity on the BBS involves searching the database for information about trades, price of credits, etc. The RECLAIM BBS will be migrated to a web application in the near future.

Trading data is collected from the RTC Transaction Registration form and entered into the RECLAIM Trading Credits system, an electronic trade registration system. The RTC system is a custom client-server application on the central database. All emission credit trades made within RECLAIM market must be registered in the RTC system which:

- Identifies credits available for trade and tracks ownership;
- Tracks all transfers of credits;
- Provides an on-line three-tier approval process for all trades;
- Prints RTC certificates; and
- Produces audit and activity reports.

A summary spreadsheet showing all registered trades for the past 90 days can be accessed from the District web site. The data are updated daily from the trading information in the central database entered through the RTC system.

*Information management programs need to be dynamic to evolve with program*

## Emission Monitoring

All facilities within the RECLAIM universe are required to submit emissions data electronically. The reporting frequency (daily, monthly, quarterly) is dependent on the type of source: major, large, process unit, or other. Data quality (e.g., device identification number, reporting period, submission date, etc.) is checked before the data is transferred into the central database.

The Emission Reporting System (ERS) enables electronic reporting of NO<sub>x</sub> and SO<sub>x</sub> emissions from RECLAIM facilities using telecommunications technology. The ERS consists of a series of custom software applications that, together, receive electronic emissions data submissions from RECLAIM facilities over the phone lines, send a receipt back to the facility if the data is acceptable, and transfer the data to the central database for processing. Facilities can also electronically submit modifying emission transaction records to correct erroneous transmissions within a quarter through the end of the quarterly reconciliation period.

All RECLAIM facilities have access to their electronic data through the District web site. The Web Access to ERS (WATERS) is a custom web-based application on the central database that allows facilities to retrieve and view via the Internet all electronically-reported RECLAIM data that have passed the acceptance checks and been transferred into the central database. Through WATERS, the facilities can also confirm that their electronic transmission of data was successful.

The RECLAIM rules also require facilities to submit quarterly and annual summary reports of emissions:

- Quarterly Certification of Emissions Report (QCER); and
- Annual Permit Emission Program Report (APEP).

These reports require an authorizing signature and are submitted on paper forms. The summary emission data is entered into the Manual Reporting System (MRS), a custom client-server application on the central database. District inspectors use this information for auditing the electronic data and determining compliance. Summary reports of NO<sub>x</sub> emission data and allocations are available on the web.

## **Compliance**

Audit reports are produced from the quarterly and annual emission summaries produced by the MRS. The audit data are reviewed for correlation with aggregated electronic data submissions and conformance with submittal due date requirements. Exceedance of an allocation feeds back into the system to reduce the following year's allocation.

## **Lessons Learned**

- Centralize data storage to simplify automated interaction between the various program elements.
- Electronic emission monitoring and reporting is the automation backbone for determining compliance in a market-based program.
- Provide the regulated community online access to the emission data reports they have submitted electronically.
- Provide an electronic forum, updated regularly, where credit holders and brokers can view accurate, up-to-date trade information and post notices for emission credits available or needed.